

**Title:**

Closing in on the Holy Grail – Beneficial Use of Hard Rock Waste as a Source for Biomineral Fertilizers

**Authors:**

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**Topic:**

Reclamation/Safeguarding/Project Implementation – Beneficial use of Waste Materials & CCB use at AML Sites

**Abstract:**

The large volumes of waste produced at mining operations are expensive to manage, and frequently cited as an obstacle in the environmental sustainability of mining. The majority of waste produced is still placed into storage facilities, and the reclamation and long-term management of these facilities has become an important part of modern mine development and mine closure.

Over the past few years, the applications of certain microorganisms have gained importance in the field of applied environmental microbiology. Amongst them, biomineral processing of metal mining from ores, concentrates, industrial wastes, overburdens with microorganisms and/or their metabolites. This process still produces waste material requiring management.

This paper describes a novel technique that combines the extraction of metals from mine waste using environmentally safe chemistry, followed by biodigestion of secondary waste from this process to generate an additional commodity. This process results in a zero-waste facility and multiple revenue streams. Bench-scale and pilot test data will be presented, as well as a description of projects currently being permitted.